ANSWERS

Quadratic Equations - Factorising

15. *(a)* By factorising, solve the following quadratic equation.

$$8x^2 + 18x - 5 = 0$$

$(4x - 1)(2x + 5) = 0$ (1)

$\therefore x = \frac{1}{4}$ or $x = -\frac{5}{2}$

(1) (1)

[3]

(b) Factorise $x^2 - 7x + 10$.

(1) (1)

$(x - 2)(x - 5)$

{solutions would be $x = 2$, $x = 5$}

[2]

9. *(a)* Factorise $x^2 - 2x - 8$.

(1) (1)

$(x - 4)(x + 2)$

{Solutions would be $x = 4$, $x = -2$}

[2]

(d) Factorise $x^2 + x - 12$ and hence solve the equation $x^2 + x - 12 = 0$.

$(x+4)(x-3) = 0$ (1)

So $x = -4$ (1) $x = 3$ (1)

[3]

(c) Factorise the expression $10x^2 + 23x - 5$ and hence solve the equation $10x^2 + 23x - 5 = 0$.

$(5x-1)(2x+5) = 0$ (1)

So $x = \frac{1}{5}$ (1) or $x = \frac{-5}{2}$ (1)

[3]

13. *(a)* (i) Factorise $x^2 - 64$.

Difference of two squares.

$(x-8)(x+8)$ (1)

(ii) Simplify $\dfrac{x^2-64}{2x^2-15x-8}$.

Top from above : $\dfrac{(x-8)(x+8)}{}$ (1)

Factorise bottom : $(2x+1)(x-8)$ (1)

Cancelling $\dfrac{\cancel{(x-8)}(x+8)}{(2x+1)\cancel{(x-8)}} = \dfrac{x+8}{2x+1}$ (1)

[4]

17. *(a)* Factorise the expression $14w^2 + 23w + 3$ and hence solve the equation $14w^2 + 23w + 3 = 0$.

$(7w+1)(2w+3) = 0$ (1)

$\therefore w = -\frac{1}{7}$ or $w = -\frac{3}{2}$ (1)

(1)

[3]

(b) Factorise the expression $9e^2 - 49$.

(1)

Difference of two squares $(3e-7)(3e+7)$ (1)

[2]

12. (a) (i) Factorise $25x^2 - 49y^2$.

Difference of two squares

$(5x - 7y)(5x + 7y)$ (1)

(ii) Hence simplify $\dfrac{25x^2 - 49y^2}{10x^2 - 14xy}$.

Top from above: $\dfrac{(5x-7y)(5x+7y)}{}$ (1)

Factorise bottom: $2x(5x - 7y)$ (1)

Cancel $\dfrac{\cancel{(5x-7y)}(5x+7y)}{2x\cancel{(5x-7y)}} = \dfrac{5x+7y}{2x}$ (1)

[4]

(b) Factorise the expression $15x^2 + 19x + 6$, and hence solve the equation $15x^2 + 19x + 6 = 0$.

$(5x + 3)(3x + 2) = 0$ (1)

$x = -3/5$ (1) or $x = -2/3$ (1)

[3]